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In Re Application Of: Yukio Michishita

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PATENT & TRADEMARK OFFICE

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| 09/933,705 | August 22, 2001 | Bello, A. | 21254 | 2613 | 6227 |

Invention: OPTICAL TRANSMISSION PATH MONITORING SYSTEM, MONITORING APPARATUS THEREFOR AND MONITORING METHOD THEREFOR

COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on April 12, 2006

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Dated: **June 12, 2006**


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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of

Yukio MICHISHITA

Serial No.: **09/933,705** Group Art Unit: 2613

Filed: August 22, 2001 Examiner: Bello, A.

For: **OPTICAL TRANSMISSION PATH MONITORING SYSTEM, MONITORING APPARATUS THEREFOR AND MONITORING METHOD THEREFOR**

Commissioner of Patents
Alexanderia, VA 22313-1450

**APPELLANT'S BRIEF ON APPEAL**

Sir:

Appellant respectfully appeals the rejection of claims 1, 3-11, 23, and 25-39 in the Office Action dated January 12, 2006. A Notice of Appeal was timely filed on April 12, 2006.

## I. REAL PARTY IN INTEREST

The real party in interest is NEC Corporation, assignee of 100% interest of the above-referenced patent application.

## II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant, Appellant's legal representative or Assignee which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF CLAIMS

Claims 1, 3-11, 23, and 25-39, all of the claims presently pending in the application, stand rejected on prior art grounds.

Claims 1, 3, 6, 23, 25, 32, and 36 stand rejected under 35 USC §102(e) as anticipated by commonly-assigned US Patent 6,301,404 to Yoneyama. Claims 4, 5, 7-11, 26-31, 33-35, and 37-39 stand rejected under 35 USC §103(a) as unpatentable over Yoneyama.

These rejections are being appealed for all pending claims.

## IV. STATUS OF AMENDMENTS

A Request for Reconsideration Under 37 CFR §1.116 was filed on March 6, 2006. In the Advisory Action dated March 23, 2006, the Examiner indicated that the rejection based on Yoneyama was maintained. The claims in the Appendix reflect a clean version of the claims of the Amendment Under 37 CFR §1.111 filed on October 27, 2005.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's invention, as disclosed and claimed in, for example, independent claim 1, is directed to an optical transmission path monitoring system for monitoring optical transmission paths by wavelength-division multiplexing probe lights with signal lights of a wavelength division multiplexing optical transmission system (Figure 1 and corresponding

discussion beginning at line 22 of page 7). An optical fiber monitoring probe light 11 (Figure 1, and line 20 on page 8; items 11, 31 on Figure 5 and lines 9-17 on page 13) monitors optical fibers which constitute some parts of the optical transmission paths, and an optical amplifier-repeater monitoring probe light 12 (Figure 1, and lines 20-21 on page 8; items 12, 32 on Figure 5 and lines 18-25 of page 13) monitors optical amplifier-repeaters which constitute other parts of the optical transmission paths

A wavelength of the optical fiber monitoring probe light comprises such a wavelength as makes wavelength dispersion in the optical transmission paths negative (Figure 4, left side), and a wavelength of the optical amplifier-repeater monitoring probe light comprises such a wavelength as makes wavelength dispersion in the optical transmission paths positive (Figure 4, right side).

Also see Figure 3 and corresponding description at line 24 on page 11 through line 17 on page 12 for discussion of wavelength dispersion, with particular focus on the discussion that the composition of the optical fibers of the network is an element that contributes to the effect described in the claimed invention in claim 1.

Figures 7A and 7B show the trace for the light 11 used <u>specifically for monitoring the optical fibers</u>. The reason for using the <u>negative region</u> of Figure 4 for <u>monitoring specifically the optical fiber</u> is explained at line 21 of page 17 through line 4 of page 18. As further shown in Figure 9A, the negative dispersion allows a sharper optical spectrum than that of the positive dispersion shown in Figure 9B.

The effect of negative dispersion can be seen by comparing Figures 7A and 8, wherein Figure 8 shows that positive dispersion causes the peak level of the trace falls steeply with distance.

In contrast, Figure 11 shows the trace for the light 12 used <u>specifically for monitoring the optical amplifier-repeaters</u>, demonstrating the substantially constant peak levels over the 8000 km span due to using a directly detecting type receiver for the amplifier-repeater monitoring (lines 18-24 of page 20). The reason for using the <u>positive region</u> of Figure 4 for <u>monitoring specifically the amplifiers/repeaters</u> is explained at line 5 of page 21 through line 12 of page 22, which explains that a longer wavelength is more sensitive to detecting changes in gain due to amplifier-repeater failure.

Therefore, by using <u>two</u> traces, the one shown in Figure 7A, wherein the shorter wavelength probe light takes advantage of the negative dispersion characteristic of the optical fiber network for <u>specifically monitoring the fibers</u>, and the other shown in Figure 11, wherein the longer wavelength probe light is more suitable for specifically monitoring the amplifier-repeaters, allows an operator to determine the location of a fault in the system and differentiate the type of failure (line 13 on page 22 through line 7 on page 23).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellant presents the following issues for review by the Board of Patent Appeals and Interferences:

ISSUE 1: <u>THE ANTICIPATION REJECTION</u>

Whether the rejection under 35 U.S.C. § 102(e) can be maintained for claims 1, 3, 6, 23, 25, 32, and 36, when the rejection clearly fails to address the plain meaning of the claim language as would be agreeable to one having ordinary skill in the art.

ISSUE 2: <u>THE OBVIOUSNESS REJECTION</u>

Whether the rejection under 35 U.S.C. § 103(a) can be maintained for claims 4, 5, 7-11, 26-31, 33-35, and 37-39, when the reference cited is <u>commonly-assigned</u> and qualifies as a prior art reference only under 35 U.S.C. § 102(e).

## VII. ARGUMENTS

### <u>ISSUE #1: The Anticipation Rejection based on Yoneyama</u>

#### A. The Examiner's Position on Anticipation

The Examiner alleges that claims 1, 3, 6, 23, 25, 32, and 36 are anticipated by Yoneyama. In the rejection, the Examiner relies upon the two supervisory signal lights

λsv1 and λsv2 shown respectively in Figures 9 and 10, and the discussion at lines 13-20 and 35-40 of column 11.

Since there is no mention in the rejection concerning positive and negative dispersion, presumably, Examiner considers that the claim language is inherently satisfied by the having one supervisory signal light λsv1 to the left of the signal lights and a second supervisory signal light λsv2 to the right of the signal lights.

**B. Appellant's Position on Anticipation**

**Firstly, the Examiner's position is <u>flawed as a matter of law</u>.**

In order to anticipate a claimed invention, every feature of the claimed invention must be identified in the prior art reference. Appellant submits that the rejection currently of record fails to do so.

Since there is no mention in Yoneyama about positive and negative dispersion, the Examiner is presumably relying upon inherency to satisfy this description in the claims. However, the rejection makes no statement or analysis related to inherency. Therefore, the rejection fails to meet the initial burden of a *prima facie* rejection for this deficiency alone.

**Secondly, the Examiner's position is <u>flawed as a matter of fact</u>.**

Appellant further submits that the evaluation currently of record is clearly deficient at a matter of fact, based on the description within the cited reference itself.

First, as indicated above, Yoneyama makes no reference to positive and negative dispersion, as required to satisfy the plain meaning of the claim language. Appellant submits that, contrary to the supposed presumption of the Examiner that such dispersion is inherent in a fiber optic transmission system, as explained at line 24 of page 11 through line 17 of page 12, the dispersion in the transmission fibers is dependent upon the composition of the fibers.

Without having at least a portion of transmission lines comprising the non-zero dispersion shift fibers, the dispersion characteristics necessary for satisfying the plain

meaning of the claim language is not present in Yoneyama, so the Examiner is not entitled to rely upon inherency for this feature.

Second, and even more significant, contrary to the Examiner's characterization, there is no suggestion whatsoever in the cited lines of Yoneyama that light signal λsv1 is specifically used to monitor optical fibers and light signal λsv2 is specifically used to monitor amplifier-repeaters. Indeed, the description at lines 13-19 of column 11 clearly describes that the supervisory light is intended to monitor both the optical fibers and the amplifier-repeaters, as mentioned in the background discussion at lines 6-9 of page 3 of the present Application.

Third, and possibly even more significant, contrary to the Examiner's characterization that these two supervisory lights λsv1 and λsv2 are used for the purpose of separately monitoring fibers versus amplifier-repeaters, Appellant submits that lines 36-39 of column 11, the reason that the two supervisory lights are used together in Yoneyama is for the entirely different function of being able to simultaneously monitor both the up and down lines.

In contrast, Appellant has recognized that:

1. If the optic fiber transmission lines are specifically designed for the dispersion characteristics exemplarily illustrated in Figure 4; and

2. Understanding the significance of negative dispersion relative to monitoring the fibers, as exemplarily demonstrated in Figures 7A through 9B; and

3. Understanding the significance of using longer wavelength for monitoring the amplifier-repeaters, as exemplarily demonstrated in Figure 12; then

4. A first monitor light directed toward the advantage of negative dispersion could be used to specifically monitor the fibers to provide an indication such as shown in Figure 7A; and

5. A second monitor light directed toward a longer wavelength could be used to specifically monitor the amplifier-repeaters to provide an indication such as shown in Figure 11.

Appellant submits that this combination of elements is neither suggested nor in any way obvious by Yoneyama, let alone being anticipated.

**<u>ISSUE #2: The Obviousness Rejection based on Yoneyama</u>**

**A. The Examiner's Position on Obviousness**

The Examiner alleges that claims 4, 5, 7-11, 26-31, 33-35, and 37-39 are rendered obvious by Yoneyama.

**B. Appellant's Position on Obviousness**

Clearly, the Examiner's position is <u>flawed as a matter of law</u> because of its common assignment to NEC Corporation relative to the cited reference.

In accordance with 35 USC §103(c) (e.g., "*Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.*"), since the present Application was subject to an obligation of assignment to NEC Corporation, the assignee of record of US Patent 6,301,404 to Yoneyama, this rejection cannot be maintained.

## VIII. CONCLUSION

In view of the foregoing, Appellants submit that claims 1, 3-11, 23, and 25-39, all the claims presently pending in the application, are clearly patentably distinct from the prior art of record and in condition for allowance. Thus, the Board is respectfully requested to remove all rejections of claims 1, 3-11, 23, and 25-39.

Please charge any deficiencies and/or credit any overpayments necessary to enter this paper to Attorney's Deposit Account number 50-0481.

Respectfully submitted,

Frederick Cooperrider

Dated: 6/12/06

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## CLAIMS APPENDIX

1. (Previously presented) An optical transmission path monitoring system for monitoring optical transmission paths by wavelength-division multiplexing probe lights with signal lights of a wavelength division multiplexing optical transmission system, said optical transmission path monitoring system comprising:

an optical fiber monitoring probe light for monitoring optical fibers which constitute some parts of said optical transmission paths; and

an optical amplifier-repeater monitoring probe light for monitoring optical amplifier-repeaters which constitute other parts of said optical transmission paths,

wherein a wavelength of said optical fiber monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said optical amplifier-repeater monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

2. (Canceled)

3. (Previously presented) The optical transmission path monitoring system, as claimed in Claim 1, wherein:

said optical transmission paths have a zero dispersion wavelength which makes a wavelength dispersion of group delays over a full length of said optical transmission paths zero;

a wavelength of said optical fiber monitoring probe light is on a shorter wavelength side than said zero dispersion wavelength; and

a wavelength of said optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength.

4. (Previously presented) The optical transmission path monitoring system, as claimed in Claim 1, wherein:

said wavelength division multiplexing optical transmission system comprises two-core two-way optical transmission paths, and comprises a total of four probe lights including said optical fiber monitoring probe light and said optical amplifier-repeater monitoring probe light for delivering to each of two outward optical transmission paths which said two-core two-way optical transmission paths have; and

every one of said four probe lights has a different wavelength from the others.

5. (Previously presented) The optical transmission path monitoring system, as claimed in Claim 4, further comprising:

probe light generating means for generating said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights;

multiplexing means for multiplexing said probe lights with signal lights and delivering multiplexed lights to an outward optical transmission path;

loop back means for branching reflected light components generating from said probe lights from said outward optical transmission path and coupling the branched lights

with signal lights on an inward optical transmission path; and

optical detecting means for detecting said light components transmitted by said loop back means and outputted from said inward optical transmission path, wherein:

said optical transmission paths are monitored on a basis of an output of said optical detecting means.

6. (Original Claim) The optical transmission path monitoring system, as claimed in Claim 5, wherein:

said optical detecting means optically detects by a coherent light detecting system said light components transmitted by said loop back means and outputted from said inward optical transmission path.

7. (Previously presented) The optical transmission path monitoring system, as claimed in Claim 6, wherein:

said coherent light detecting system comprises an optical homodyne detection system using said optical fiber monitoring probe light from said inward optical transmission path as a received light and a light partially branched from said optical fiber monitoring probe light from said probe light generating means as a local oscillating light.

8. (Original Claim) The optical transmission path monitoring system, as claimed in Claim 5, wherein:

said optical detecting means optically detects by a direct light detecting system

said light components transmitted by said loop back means and outputted from said inward optical transmission path.

9. (Previously presented) The optical transmission path monitoring system, as claimed in Claim 5, wherein:

said loop back means comprises two 2×2 optical couplers inserted into said optical transmission paths and mutually connected by one each of optical terminals.

10. (Previously presented) The optical transmission path monitoring system, as claimed in Claim 9, wherein:

said 2×2 optical couplers comprise light reflecting means for selectively reflecting said optical amplifier-repeater monitoring probe lights.

11. (Previously presented) The optical transmission path monitoring system, as claimed in Claim 5, further comprising:

means for alternatively selecting said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights for supply to said outward optical transmission path, and monitoring the optical fibers and the optical amplifier-repeaters on a time-division basis.

12-22. (Canceled)

23. (Previously presented) An optical transmission path monitoring method for monitoring optical transmission paths by wavelength-division multiplexing probe lights with signal lights of a wavelength division multiplexing optical transmission system, said method comprising:

using an optical fiber monitoring probe light for monitoring optical fibers which constitute some parts of said optical transmission paths; and

using an optical amplifier-repeater monitoring probe light for monitoring optical amplifier-repeaters which constitute other parts of said optical transmission paths,

wherein a wavelength of said optical fiber monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said optical amplifier-repeater monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

24. (Canceled)

25. (Previously presented) The optical transmission path monitoring method, as claimed in Claim 23, wherein:

said optical transmission path has a zero dispersion wavelength which makes a wavelength dispersion of group delays over a full length of said optical transmission paths zero;

a wavelength of said optical fiber monitoring probe light is on a shorter wavelength side than said zero dispersion wavelength; and

a wavelength of said optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength.

26. (Previously presented) The optical transmission path monitoring method, as claimed in Claim 23, wherein:

said wavelength division multiplexing optical transmission system comprises two-core two-way optical transmission paths, and comprises a total of four probe lights including said optical fiber monitoring probe light and said optical amplifier-repeater monitoring probe light for delivering to each of two outward optical transmission paths which said two-core two-way optical transmission paths include; and

every one of said four probe lights has a different wavelength from the others.

27. (Previously presented) The optical transmission path monitoring method, as claimed in Claim 26, said method comprising:

generating said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights;

multiplexing said probe lights with signal lights and delivering multiplexed lights to said outward optical transmission path; and

detecting said light components outputted from said inward optical transmission path by branching reflected light components generating from said probe lights from an outward optical transmission path and looping back branched lights onto an inward optical transmission path,

whereby said optical transmission paths are monitored on a basis of an output of said optical detecting means.

28. (Previously presented) The optical transmission path monitoring method, as claimed in Claim 27, whereby:

light components outputted from said inward optical transmission path are detected by a coherent light detecting system during said detecting light components.

29. (Previously presented) The optical transmission path monitoring method, as claimed in Claim 28, whereby:

said coherent light detecting system comprises an optical homodyne detection system using said optical fiber monitoring probe light from said inward optical transmission path as a received light and a light partially branched from said optical fiber monitoring probe light generated from said probe light as a local oscillating light.

30. (Previously presented) The optical transmission path monitoring method, as claimed in Claim 27, whereby:

said light components transmitted by said looping back and outputted from said inward optical transmission path are detected by a direct light detecting system during said detecting light components.

31. (Original Claim) The optical transmission path monitoring method, as claimed in Claim 27, whereby:

said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights are alternatively selected for supply to said outward optical transmission path, and the optical fibers and the optical amplifier-repeaters are monitored on a time-division basis.

32. (Previously presented) An optical monitoring apparatus for monitoring an optical transmission path, comprising:

a first probe light generating unit for emitting a first optical fiber monitoring probe light which monitors optical fibers constituting said optical transmissions path; and

a second probe light generating unit for emitting a first optical amplifier-repeater monitoring probe light which monitors optical amplifier repeaters constituting said optical transmission path,

wherein a wavelength of said first optical fiber monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said first optical amplifier-repeater monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

33. (Previously presented) The optical monitoring apparatus as claimed in claim 32, further comprising:

a first probe light detecting unit for detecting a second optical fiber monitoring

probe light which monitors said optical fibers; and

a second probe light detecting unit for detecting a second optical amplifier-repeater monitoring probe light which monitors said optical amplifier repeaters,

wherein a wavelength of said second optical fiber monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said second optical amplifier-repeater monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

34. (Previously presented) The optical monitoring apparatus as claimed in claim 33, wherein:

the wavelength of said first optical fiber monitoring probe light differs from the wavelength of said second optical fiber monitoring probe light; and

the wavelength of said first optical amplifier-repeater monitoring probe light differs from the wavelength of said second optical amplifier-repeater monitoring probe light.

35. (Previously presented) The optical monitoring apparatus as claimed in claim 33, further comprising:

an optical coupling unit for coupling said first optical fiber monitoring probe light and first optical amplifier-repeater monitoring probe light; and

an optical switching unit for changing connections with said optical transmission path to said first probe light detecting unit or said second probe light detecting unit.

36. (Previously presented) The optical monitoring apparatus as claimed in claim 32, wherein:

the wavelengths of said first optical fiber monitoring probe light is on a shorter wavelength side than a zero dispersion wavelength which makes a wavelength dispersion in said optical transmission path zero; and

the wavelength of said first optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength.

37. (Previously presented) The optical monitoring apparatus as claimed in claim 33, wherein:

the wavelength of said second optical fiber monitoring probe light is on a shorter wavelength side than a zero dispersion wavelength which makes a wavelength dispersion in said optical transmission path zero; and

the wavelengths of said second optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength.

38. (Previously presented) The optical monitoring apparatus as claimed in claim 33, wherein:

said first probe light detecting unit optically detects by an optical homodyne detecting system.

39. (Previously presented) The optical monitoring apparatus as claimed in claim 33, wherein:

said second probe light detecting unit optically detects by a direct light detecting system.

**EVIDENCE APPENDIX**

(NONE)

**RELATED PROCEEDINGS APPENDIX**

(NONE)